Freeform Search

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Term: L7 and "UAV"

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

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Search History

DATE: Thursday, August 10, 2006 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR		
L8	L7 and "UAV"	19	L8
L7	l1 or l5 or l6	21	L7
	DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR		
L6	(6728630 | 6711477 | 6748316 | 6122572 | 5716032 | 6626398 | 6584382)![PN]	7	L6
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR		
L5	('20050094851'| '20060167622'| '20060167596'| '20060167597'| '20060167599'| '20050090972'| 'US20050094851A'| '6813559'| '6856894'| '20050090945'| 'US20050090945A'| 'US20050090972A')[ABPN1,NRPN,PN,TBAN,WKU]	14	L5
L4	('20050094851'| '20060167622'| '20060167596'| '20060167597'| '20060167599'| '20050090972'| 'US20050094851A'| '6813559'| '6856894'| '20050090945'| 'US20050090945A'| 'US20050090972A')[URPN]	3	L4
L3	L1 and @pd<=20031023	0	L3
L2	L1 and @ad<=20031023	8	L2
L1	(map$ with pixel$) and (("UAV" with navigat$) same waypoint$)	12	L1

Hit List

First Hit | Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 11 through 19 of 19 returned.

☐ 11. Document ID: US 6626398 B1

L8: Entry 11 of 19 File: USPT Sep 30, 2003

US-PAT-NO: 6626398
DOCUMENT-IDENTIFIER: US 6626398 B1

TITLE: Unmanned biplane for airborne reconnaissance and surveillance having staggered and gapped wings

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 12. Document ID: US 6584382 B2

L8: Entry 12 of 19 File: USPT Jun 24, 2003

US-PAT-NO: 6584382
DOCUMENT-IDENTIFIER: US 6584382 B2

TITLE: Intuitive vehicle and machine control

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 13. Document ID: US 6122572 A

L8: Entry 13 of 19 File: USPT Sep 19, 2000

US-PAT-NO: 6122572
DOCUMENT-IDENTIFIER: US 6122572 A
**** See image for Certificate of Correction ****

TITLE: Autonomous command and control unit for mobile platform

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 14. Document ID: US 5716032 A

L8: Entry 14 of 19 File: USPT Feb 10, 1998

US-PAT-NO: 5716032
DOCUMENT-IDENTIFIER: US 5716032 A

TITLE: Unmanned aerial vehicle automatic landing system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 15. Document ID: US 20050094851 A1

L8: Entry 15 of 19 File: DWPI May 5, 2005

DERWENT-ACC-NO: 2005-402005
DERWENT-WEEK: 200541

TITLE: UAV e.g. aircraft, navigating method, involves finding heading based on starting position, coordinates of waypoint and navigation algorithm, and sending uplink telemetry, including flight control instructions, to UAV

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 16. Document ID: US 20050090972 A1

L8: Entry 16 of 19 File: DWPI Apr 28, 2005

DERWENT-ACC-NO: 2005-401886
DERWENT-WEEK: 200541

TITLE: Unmanned aerial vehicle navigating method, involves reading starting position of vehicle from receiver on vehicle, and piloting vehicle from starting position to waypoint, based on navigation algorithm

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 17. Document ID: US 20050090945 A1

L8: Entry 17 of 19 File: DWPI Apr 28, 2005

DERWENT-ACC-NO: 2005-401885
DERWENT-WEEK: 200541

TITLE: UAV navigating method, involves calculating heading based upon starting point, waypoint coordinates and navigation algorithm, identifying flight control instructions on heading, and transmitting instructions to UAV

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 18. Document ID: US 6856894 B1

L8: Entry 18 of 19 File: DWPI Feb 15, 2005

DERWENT-ACC-NO: 2005-210090
DERWENT-WEEK: 200522

TITLE: UAV (unmanned aerial vehicle) navigating method involves depicting UAV flight as three-dimensional computer graphic with earth image based on GPS data representing UAV flight path

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 19. Document ID: US 6813559 B1

L8: Entry 19 of 19   File: DWPI   Nov 2, 2004

DERWENT-ACC-NO: 2004-830765
DERWENT-WEEK: 200482

TITLE: Unmanned aerial vehicle navigating method involves selecting heading parallel to bracket line identifying latitude/longitude ranges, when UAV enters course segment without coordinates, to tune UAV in orbital direction to fly on heading

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L7 and "UAV"	19

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Day : Thursday
Date: 8/10/2006
Time: 14:36:59

PALM INTRANET

Patent Number Information

Application Number: 10/692126
Assignments
Filing or 371(c) Date: **10/23/2003**
Effective Date: **10/23/2003**
Application Received: **10/24/2003**
Patent Number: **6813559**
Issue Date: **11/02/2004**
Date of Abandonment: **00/00/0000**
Attorney Docket Number: **AUS920030672US1**
Status: **150 / PATENTED CASE**
Confirmation Number: **2152**
Title of Invention: **ORBITING A WAYPOINT**

Examiner Number: **64458 / CAMBY, RICHARD**
Group Art Unit: 3661 **IFW IMAGE**
Class/Subclass: **701/206.000**
Lost Case: **NO**
Interference Number:
Unmatched Petition: **NO**
L&R Code: Secrecy Code:**1**
Third Level Review: **NO** Secrecy Order: **NO**
Status Date: **10/14/2004**
Oral Hearing: **NO**

Appln Info | Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | Foreign Data

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Attorney Docket # [ ] Search
Bar Code # [ ] Search

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Day : Thursday
Date: 8/10/2006
Time: 14:38:34

PALM INTRANET

Application Number Information

Application Number: **10/692118**
Assignments
Filing or 371(c) Date: **10/23/2003**
Effective Date: **10/23/2003**
Application Received: **10/24/2003**
Pat. Num./Pub. Num: **/20050090945**
Issue Date: **00/00/0000**
Date of Abandonment: **00/00/0000**
Attorney Docket Number: **AUS920030675US1**

Examiner Number: **64458 / CAMBY, RICHARD**
Group Art Unit: **3661** **IFW IMAGE**
Class/Subclass: **701/206.000**
Lost Case: **NO**
Interference Number:
Unmatched Petition: **NO**
L&R Code: Secrecy Code:**1**
Third Level Review: **NO** Secrecy Order: **NO**

Status: **95 /PUBLICATIONS -- ISSUE FEE PAYMENT VERIFIED** Status Date: **07/31/2006**
Confirmation Number: **2153** Oral Hearing: **NO**
Title of Invention: **NAVIGATING A UAV WITH A REMOTE CONTROL DEVICE**

Bar Code	PALM Location	Location Date	Charge to Loc	Charge to Name	Employee Name	Location

Appln Info Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | Foreign Data

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Bar Code # Search

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Generate Collection Print

L2: Entry 4 of 8 File: USPT Feb 15, 2005

US-PAT-NO: 6856894
DOCUMENT-IDENTIFIER: US 6856894 B1

TITLE: Navigating a UAV under remote control and manual control with three dimensional flight depiction

DATE-ISSUED: February 15, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bodin; William Kress	Austin	TX		
Redman; Jesse J. W.	Cedar Park	TX		
Thorson; Derral C.	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 10/692130 [PALM]
DATE FILED: October 23, 2003

INT-CL-ISSUED: [07] G01 C 21/28

US-CL-ISSUED: 701/206; 701/3, 701/23, 701/24, 701/213, 244/75R
US-CL-CURRENT: 701/206; 244/75.1, 701/213, 701/23, 701/24, 701/3
/76R
FIELD-OF-CLASSIFICATION-SEARCH: 701/1, 701/2, 701/3, 701/10, 701/13, 701/200-214, 701/23, 701/24, 340/974, 340/979, 244/45R, 244/75R
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
5716032	February 1998	McIngvale	244/185
6122572	September 2000	Yavnai	701/23
6584382	June 2003	Karem	701/3
6626398	September 2003	Cox et al.	244/45R

☐	6711477	March 2004	Johnson et al.	701/3
☐	6728630	April 2004	Burt et al.	701/202
☐	6748316	June 2004	Takayama et al.	701/200

ART-UNIT: 3661

PRIMARY-EXAMINER: Camby; Richard M.

ATTY-AGENT-FIRM: Biggers; John R. Walker; Mark S. Biggers & Ohanian, LLP

ABSTRACT:

Navigating a UAV including receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, mapping the pixel's location on the GUI to Earth coordinates of the waypoint, transmitting the coordinates of the waypoint to the UAV, reading a starting position from a GPS receiver on the UAV, piloting the UAV, under control of a navigation computer on the UAV, from the starting position to the waypoint in accordance with a navigation algorithm, and changing from piloting the UAV under control of a navigation computer on the UAV to piloting the UAV under manual control. While piloting the UAV under manual control, reading from the GPS receiver a sequence of GPS data representing a flight path of the UAV, and depicting the flight of the UAV with 3D computer graphics.

24 Claims, 17 Drawing figures

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Day : Thursday
Date: 8/10/2006
Time: 14:25:29

PALM INTRANET

Application Number Information

Application Number: **10/692126**
Assignments
Filing or 371(c) Date: **10/23/2003**
Effective Date: **10/23/2003**
Application Received: **10/24/2003**
Patent Number: 6813559
Issue Date: **11/02/2004**
Date of Abandonment: **00/00/0000**
Attorney Docket Number: **AUS920030672US1**
Status: **150 /PATENTED CASE**
Confirmation Number: **2152**
Title of Invention: **ORBITING A WAYPOINT**

Examiner Number: **64458 / CAMBY, RICHARD**
Group Art Unit: 3661 **IFW IMAGE**
Class/Subclass: **701/206.000**
Lost Case: **NO**
Interference Number:
Unmatched Petition: **NO**
L&R Code: Secrecy Code:**1**
Third Level Review: **NO** Secrecy Order: **NO**
Status Date: **10/14/2004**
Oral Hearing: **NO**

Bar Code	PALM Location	Location Date	Charge to Loc	Charge to Name	Employee Name	Location

Appln Info Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | Foreign Data

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L2: Entry 5 of 8 File: USPT Nov 2, 2004

US-PAT-NO: 6813559
DOCUMENT-IDENTIFIER: US 6813559 B1

TITLE: Orbiting a waypoint

DATE-ISSUED: November 2, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bodin; William Kress	Austin	TX		
Redman; Jesse J. W.	Cedar Park	TX		
Thorson; Derral C.	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 10/692126 [PALM]
DATE FILED: October 23, 2003

INT-CL-ISSUED: [07] G01 C 21/26

US-CL-ISSUED: 701/206; 701/3, 701/23, 701/24, 701/213, 244/75R
US-CL-CURRENT: 701/206; 244/75.1, 701/213, 701/23, 701/24, 701/3

FIELD-OF-CLASSIFICATION-SEARCH: 701/1, 701/2, 701/3, 701/10, 701/13, 701/200-214, 701/23, 701/24, 340/974, 340/979, 244/45R, 244/75R
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
5716032	February 1998	McIngvale	244/185
6122572	September 2000	Yavnai	701/23
6584382	June 2003	Karem	701/3
6626398	September 2003	Cox et al.	244/45R
6711477	March 2004	Johnson et al.	701/3

ART-UNIT: 3661

PRIMARY-EXAMINER: Camby; Richard M.

ATTY-AGENT-FIRM: Biggers; John R. Carwell; Robert M. Biggers & Ohanian, LLP

ABSTRACT:

Navigating a UAV including orbiting a waypoint including defining four bracket lines surrounding a waypoint, flying the UAV from a course segment having coordinate values in a range into a course segment not having coordinate values in the range, wherein a bounding bracket line defines a boundary between the segments; selecting, a heading parallel to a bracket line in dependence upon an orbital direction; the UAV in the orbital direction to fly on a the heading; and repeatedly: flying the UAV from a course segment having coordinate values in a range into a course segment not having coordinate values in the range, wherein a bounding bracket line defines a boundary between the segments; and turning the UAV in the orbital direction to fly on a heading parallel to the bounding bracket line.

21 Claims, 19 Drawing figures

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Search Results - Record(s) 1 through 10 of 19 returned.

☐ 1. Document ID: US 20060167622 A1

L8: Entry 1 of 19 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167622
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167622 A1

TITLE: Navigating UAVs in formations

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/206; 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: US 20060167599 A1

L8: Entry 2 of 19 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167599
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167599 A1

TITLE: Identifying a UAV landing location

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/16; 340/947

☐ 3. Document ID: US 20060167597 A1

L8: Entry 3 of 19 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167597
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167597 A1

TITLE: Enabling services on a UAV

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/206

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De |

☐ 4. Document ID: US 20060167596 A1

L8: Entry 4 of 19 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167596
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167596 A1

TITLE: Depicting the flight of a formation of UAVs

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/301

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De |

☐ 5. Document ID: US 20050094851 A1

L8: Entry 5 of 19 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050094851
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050094851 A1

TITLE: Navigating a UAV with telemetry through a socket

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 382/106; 343/705, 382/107, 382/108, 382/154, 398/121, 701/2, 701/3, 701/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 6. Document ID: US 20050090972 A1

L8: Entry 6 of 19 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090972
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090972 A1

TITLE: Navigating a UAV

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/206; 701/200, 701/213

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 7. Document ID: US 20050090945 A1

L8: Entry 7 of 19 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090945
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090945 A1

TITLE: Navigating a UAV with a remote control device

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/2; 701/213, 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 8. Document ID: US 6856894 B1

L8: Entry 8 of 19 File: USPT Feb 15, 2005

US-PAT-NO: 6856894
DOCUMENT-IDENTIFIER: US 6856894 B1

TITLE: Navigating a UAV under remote control and manual control with three dimensional flight depiction

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 9. Document ID: US 6813559 B1

L8: Entry 9 of 19 File: USPT Nov 2, 2004

US-PAT-NO: 6813559
DOCUMENT-IDENTIFIER: US 6813559 B1

TITLE: Orbiting a waypoint

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 10. Document ID: US 6711477 B1

L8: Entry 10 of 19 File: USPT Mar 23, 2004

US-PAT-NO: 6711477
DOCUMENT-IDENTIFIER: US 6711477 B1

TITLE: Automatic flight envelope protection for uninhabited air vehicles: method for determining point in flight envelope

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L7 and "UAV"	19

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Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

7. Document ID: US 20050090945 A1

L1: Entry 7 of 12 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090945
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090945 A1

TITLE: Navigating a UAV with a remote control device

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/2; 701/213, 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

8. Document ID: US 6856894 B1

L1: Entry 8 of 12 File: USPT Feb 15, 2005

US-PAT-NO: 6856894
DOCUMENT-IDENTIFIER: US 6856894 B1

TITLE: Navigating a UAV under remote control and manual control with three dimensional flight depiction

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

9. Document ID: US 6813559 B1

same

L1: Entry 9 of 12 File: USPT Nov 2, 2004

US-PAT-NO: 6813559
DOCUMENT-IDENTIFIER: US 6813559 B1

TITLE: Orbiting a waypoint

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 10. Document ID: US 20050094851 A1

L1: Entry 10 of 12 File: DWPI May 5, 2005

DERWENT-ACC-NO: 2005-402005
DERWENT-WEEK: 200541

TITLE: UAV e.g. aircraft, navigating method, involves finding heading based on starting position, coordinates of waypoint and navigation algorithm, and sending uplink telemetry, including flight control instructions, to UAV

Terms	Documents
(map$ with pixel$) and (("UAV" with navigat$) same waypoint$)	12

Hit List

First Hit Your wildcard search against 10000 terms has yielded the results below.

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The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 11 through 12 of 12 returned.

11. Document ID: US 20050090972 A1

L1: Entry 11 of 12 File: DWPI Apr 28, 2005

DERWENT-ACC-NO: 2005-401886
DERWENT-WEEK: 200541

TITLE: Unmanned aerial vehicle navigating method, involves reading starting position of vehicle from receiver on vehicle, and piloting vehicle from starting position to waypoint, based on navigation algorithm

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

12. Document ID: US 20050090945 A1

L1: Entry 12 of 12 File: DWPI Apr 28, 2005

DERWENT-ACC-NO: 2005-401885
DERWENT-WEEK: 200541

TITLE: UAV navigating method, involves calculating heading based upon starting point, waypoint coordinates and navigation algorithm, identifying flight control instructions on heading, and transmitting instructions to UAV

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
(map$ with pixel$) and (("UAV" with navigat$) same waypoint$)	12

Hit List

First Hit
Your wildcard search against 10000 terms has yielded the results below.

Your result set for the last L# is incomplete.

The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 10 of 12 returned.

1. Document ID: US 20060167622 A1

L1: Entry 1 of 12 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167622
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167622 A1

TITLE: Navigating UAVs in formations

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/206; 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. D

2. Document ID: US 20060167599 A1

L1: Entry 2 of 12 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167599
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167599 A1

TITLE: Identifying a UAV landing location

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/16; 340/947

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20060167597 A1

L1: Entry 3 of 12 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167597
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167597 A1

TITLE: Enabling services on a UAV

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/206

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 20060167596 A1

L1: Entry 4 of 12 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167596
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167596 A1

TITLE: Depicting the flight of a formation of UAVs

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US

Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/301

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 20050094851 A1

L1: Entry 5 of 12 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050094851
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050094851 A1

TITLE: Navigating a UAV with telemetry through a socket

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 382/106; 343/705, 382/107, 382/108, 382/154, 398/121, 701/2, 701/3, 701/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 6. Document ID: US 20050090972 A1

L1: Entry 6 of 12 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090972
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090972 A1

TITLE: Navigating a UAV

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/206; 701/200, 701/213

Hit List

First Hit

Your wildcard search against 10000 terms has yielded the results below.
Your result set for the last L# is incomplete.
The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 10 of 21 returned.

☐ 1. Document ID: US 20030216834 A1

L16: Entry 1 of 21 File: PGPB Nov 20, 2003

PGPUB-DOCUMENT-NUMBER: 20030216834
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030216834 A1

TITLE: Method and system for remote control of mobile robot

PUBLICATION-DATE: November 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Allard, James R.	Newton	MA	US

US-CL-CURRENT: 700/245

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: US 20030182052 A1

L16: Entry 2 of 21 File: PGPB Sep 25, 2003

PGPUB-DOCUMENT-NUMBER: 20030182052
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030182052 A1

TITLE: Integrated routing/mapping information system

PUBLICATION-DATE: September 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
DeLorme, David M.	Yarmouth	ME	US
Gray, Keith A.	Yarmouth	ME	US
Autry, Gordon	Standish	ME	US
Moulton, Keith A.	Portland	ME	US

US-CL-CURRENT: 701/201; 340/990, 701/202, 701/209

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 3. Document ID: US 20030083804 A1

L16: Entry 3 of 21 File: PGPB May 1, 2003

PGPUB-DOCUMENT-NUMBER: 20030083804
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030083804 A1

TITLE: Computer human methods for the control and management of an airport

PUBLICATION-DATE: May 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Pilley, Harold R.	Gillette	NJ	US
Wortley, Lois	Leominster	MA	US

US-CL-CURRENT: 701/120; 342/36

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 4. Document ID: US 20010037163 A1

L16: Entry 4 of 21 File: PGPB Nov 1, 2001

PGPUB-DOCUMENT-NUMBER: 20010037163
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010037163 A1

TITLE: Method and system for remote control of mobile robot

PUBLICATION-DATE: November 1, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Allard, James R.	Newton	MA	US

US-CL-CURRENT: 700/245

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 5. Document ID: US 6845297 B2

L16: Entry 5 of 21 File: USPT Jan 18, 2005

US-PAT-NO: 6845297
DOCUMENT-IDENTIFIER: US 6845297 B2

TITLE: Method and system for remote control of mobile robot

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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6. Document ID: US 6535793 B2

L16: Entry 6 of 21 File: USPT Mar 18, 2003

US-PAT-NO: 6535793
DOCUMENT-IDENTIFIER: US 6535793 B2

TITLE: Method and system for remote control of mobile robot

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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7. Document ID: US 6321158 B1

L16: Entry 7 of 21 File: USPT Nov 20, 2001

US-PAT-NO: 6321158
DOCUMENT-IDENTIFIER: US 6321158 B1

TITLE: Integrated routing/mapping information

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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8. Document ID: US 6314370 B1

L16: Entry 8 of 21 File: USPT Nov 6, 2001

US-PAT-NO: 6314370
DOCUMENT-IDENTIFIER: US 6314370 B1

TITLE: Map-based navigation system with overlays

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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9. Document ID: US 6314363 B1

L16: Entry 9 of 21 File: USPT Nov 6, 2001

US-PAT-NO: 6314363
DOCUMENT-IDENTIFIER: US 6314363 B1

TITLE: Computer human method and system for the control and management of an airport

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 10. Document ID: US 6195609 B1

L16: Entry 10 of 21 File: USPT Feb 27, 2001

US-PAT-NO: 6195609
DOCUMENT-IDENTIFIER: US 6195609 B1

TITLE: Method and system for the control and management of an airport

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L15 and (air$ or flight$ or aerial$)	21

Display Format: - Change Format

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Hit List

First Hit

Your wildcard search against 10000 terms has yielded the results below.

Your result set for the last L# is incomplete.

The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 11 through 20 of 21 returned.

☐ 11. Document ID: US 6182005 B1

L16: Entry 11 of 21 File: USPT Jan 30, 2001

US-PAT-NO: 6182005
DOCUMENT-IDENTIFIER: US 6182005 B1

TITLE: Airport guidance and safety system incorporating navigation and control using GNSS compatible methods

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 12. Document ID: US 6006158 A

L16: Entry 12 of 21 File: USPT Dec 21, 1999

US-PAT-NO: 6006158
DOCUMENT-IDENTIFIER: US 6006158 A

TITLE: Airport guidance and safety system incorporating lighting control using GNSS compatible methods

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 13. Document ID: US 5986604 A

L16: Entry 13 of 21 File: USPT Nov 16, 1999

US-PAT-NO: 5986604
DOCUMENT-IDENTIFIER: US 5986604 A

TITLE: Survey coordinate transformation optimization

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 14. Document ID: US 5884219 A

L16: Entry 14 of 21 File: USPT Mar 16, 1999

US-PAT-NO: 5884219
DOCUMENT-IDENTIFIER: US 5884219 A

TITLE: Moving map navigation system

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 15. Document ID: US 5867804 A
L16: Entry 15 of 21 File: USPT Feb 2, 1999

US-PAT-NO: 5867804
DOCUMENT-IDENTIFIER: US 5867804 A

TITLE: Method and system for the control and management of a three dimensional space envelope

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 16. Document ID: US 5815118 A
L16: Entry 16 of 21 File: USPT Sep 29, 1998

US-PAT-NO: 5815118
DOCUMENT-IDENTIFIER: US 5815118 A

TITLE: Rubber sheeting of a map

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 17. Document ID: US 5802492 A
L16: Entry 17 of 21 File: USPT Sep 1, 1998

US-PAT-NO: 5802492
DOCUMENT-IDENTIFIER: US 5802492 A

TITLE: Computer aided routing and positioning system

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 18. Document ID: US 5774826 A
L16: Entry 18 of 21 File: USPT Jun 30, 1998

US-PAT-NO: 5774826
DOCUMENT-IDENTIFIER: US 5774826 A

TITLE: Optimization of survey coordinate transformations

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 19. Document ID: US 5614913 A

L16: Entry 19 of 21 File: USPT Mar 25, 1997

US-PAT-NO: 5614913
DOCUMENT-IDENTIFIER: US 5614913 A

TITLE: Optimization of survey coordinate transformations

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 20. Document ID: US 5581259 A

L16: Entry 20 of 21 File: USPT Dec 3, 1996

US-PAT-NO: 5581259
DOCUMENT-IDENTIFIER: US 5581259 A

TITLE: Life for old maps

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L15 and (air$ or flight$ or aerial$)	21

Display Format: - Change Format

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Hit List

First Hit

Your wildcard search against 10000 terms has yielded the results below.

Your result set for the last L# is incomplete.

The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 21 through 21 of 21 returned.

☐ 21. Document ID: US 5528248 A

L16: Entry 21 of 21 File: USPT Jun 18, 1996

US-PAT-NO: 5528248
DOCUMENT-IDENTIFIER: US 5528248 A

TITLE: Personal digital location assistant including a memory cartridge, a GPS smart antenna and a personal computing device

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L15 and (air$ or flight$ or aerial$)	21

Display Format: - Change Format

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Hit List

First Hit

Your wildcard search against 10000 terms has yielded the results below.
Your result set for the last L# is incomplete.
The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 10 of 10 returned.

☐ 1. Document ID: US 20040128065 A1

L22: Entry 1 of 10 File: PGPB Jul 1, 2004

PGPUB-DOCUMENT-NUMBER: 20040128065
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040128065 A1

TITLE: Vehicle navigation system for use with a telematics system

PUBLICATION-DATE: July 1, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Taylor, David W.	Fenton	MI	US
McCarthy, Kevin C.	Tucson	AZ	US
Lynam, Niall R.	Holland	MI	US
Schofield, Kenneth	Holland	MI	US

US-CL-CURRENT: 701/201; 340/995.16, 701/209

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: US 20030216834 A1

L22: Entry 2 of 10 File: PGPB Nov 20, 2003

PGPUB-DOCUMENT-NUMBER: 20030216834
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030216834 A1

TITLE: Method and system for remote control of mobile robot

PUBLICATION-DATE: November 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Allard, James R.	Newton	MA	US

US-CL-CURRENT: 700/245

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 3. Document ID: US 20030083804 A1

L22: Entry 3 of 10 File: PGPB May 1, 2003

PGPUB-DOCUMENT-NUMBER: 20030083804
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030083804 A1

TITLE: Computer human methods for the control and management of an airport

PUBLICATION-DATE: May 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Pilley, Harold R.	Gillette	NJ	US
Wortley, Lois	Leominster	MA	US

US-CL-CURRENT: 701/120; 342/36

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 4. Document ID: US 20010037163 A1

L22: Entry 4 of 10 File: PGPB Nov 1, 2001

PGPUB-DOCUMENT-NUMBER: 20010037163
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010037163 A1

TITLE: Method and system for remote control of mobile robot

PUBLICATION-DATE: November 1, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Allard, James R.	Newton	MA	US

US-CL-CURRENT: 700/245

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 5. Document ID: US 6845297 B2

L22: Entry 5 of 10 File: USPT Jan 18, 2005

US-PAT-NO: 6845297
DOCUMENT-IDENTIFIER: US 6845297 B2

TITLE: Method and system for remote control of mobile robot

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 6. Document ID: US 6535793 B2

L22: Entry 6 of 10 File: USPT Mar 18, 2003

US-PAT-NO: 6535793
DOCUMENT-IDENTIFIER: US 6535793 B2

TITLE: Method and system for remote control of mobile robot

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

---

☐ 7. Document ID: US 6314363 B1

L22: Entry 7 of 10 File: USPT Nov 6, 2001

US-PAT-NO: 6314363
DOCUMENT-IDENTIFIER: US 6314363 B1

TITLE: Computer human method and system for the control and management of an airport

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 8. Document ID: US 6195609 B1

L22: Entry 8 of 10 File: USPT Feb 27, 2001

US-PAT-NO: 6195609
DOCUMENT-IDENTIFIER: US 6195609 B1

TITLE: Method and system for the control and management of an airport

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

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☐ 9. Document ID: US 6182005 B1

L22: Entry 9 of 10 File: USPT Jan 30, 2001

US-PAT-NO: 6182005
DOCUMENT-IDENTIFIER: US 6182005 B1

TITLE: Airport guidance and safety system incorporating navigation and control using GNSS compatible methods

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De

☐ 10. Document ID: US 6006158 A

L22: Entry 10 of 10 File: USPT Dec 21, 1999

US-PAT-NO: 6006158
DOCUMENT-IDENTIFIER: US 6006158 A

TITLE: Airport guidance and safety system incorporating lighting control using GNSS compatible methods

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L21 and (control$ with vehi$)	10

Display Format: - Change Format

Previous Page Next Page Go to Doc#

L16: Entry 13 of 21 File: USPT Nov 16, 1999

DOCUMENT-IDENTIFIER: US 5986604 A
TITLE: Survey coordinate transformation optimization

Abstract Text (1):
A system for selecting an optimal transformation T(G2;G1) between a first ellipsoid E1 (e.g., WGS 84) in a first global coordinate system G1, relative to which the survey measurements are made, and a second ellipsoid E2 (e.g., NAD 27) in a second global coordinate system G2. Location coordinates (x'.sub.m,2,y'.sub.m,2,z'.sub.m,2) for M previously-surveyed locations, numbered m=1, . . . , M (M>1) in the second system, and location coordinates (x'.sub.n,1,y'.sub.n,1,z'.sub.n,1) for N presently-surveyed locations, numbered n=1, . . . , N (M<N), in the first system are provided, where M presently-surveyed locations coincide with the M previously-surveyed locations. The transformation is chose.sub.n so that the images of previously-surveyed locations in the first system under the transformation T are as close as possible to the corresponding [previously-surveyed] locations in the second system. Give.sub.n an ellipsoid and a selected survey plane .tau.0 that is tangent to the ellipsoid, a set of selected locations can be surveyed with reference to the ellipsoid, and the location coordinates of each such surveyed location can be mapped into a corresponding "survey location," defined by reference to a local coordinate system that uses the survey plane .tau.0 as its base. These transformations and projections are determined and optimized in real time, at the time a surveyor is measuring the presently-surveyed locations in the field. The instruments used for surveying may be part of a location determination system, such as GPS, GLONASS or Loran.

Application Filing Date (1):
19970321

DATE ISSUED (1):
19991116

Brief Summary Text (3):
Maps and charts have been prepared and used in connection with various location determination systems (LDSs), such as GPS, GLONASS, Loran, Tacan, Decca, Omega, VOR, DME, JTIDS, PLRS and an FM subcarrier system. Potter et al, in U.S. Pat. No. 3,659,085, disclose use of a computer for determining the location of objects in a chosen coordinate system. A mobile station in an aircraft, marine vessel or land vehicle, moving relative to the local landscape, transmits pulse signals to a large number of signal receiving stations, all linked to a central computer. Time of signal arrival, trilateralization, differential time of arrival or other techniques are used to solve for the present location of the mobile station, based on receipt of the transmitted signals and weighting of received signals to minimize some associated errors. Iterative computations are used to determine the optimum weighting.

Brief Summary Text (5):
A navigation display that provides a continuous pictorial or graphical display of the present location of a movable vehicle or vessel, using an LDS such as VOR, Loran, ADF, DME or Tacan, is disclosed by Scovill in U.S. Pat. No. 4,253,150. The charts are stored on photographic film, and the portion of the film displayed is

varied to include the present location. This system can be used to provide readout of present ground speed of the vehicle or vessel, bearing, and estimated time to reach a waypoint or the destination. Most of the discussion is concerned with positioning of the portion of the film displayed.

Brief Summary Text (8):
A navigation system, including an integrated electronic display for charts or maps prepared by a location determination system such as Loran or Decca, is disclosed in U.S. Pat. No. 4,590,569, issued to Rogoff et al. A plurality of charts is stored digitally and displayed as needed, together with alphanumeric data such as location coordinates, bearing, waypoints, and estimated time before arrival at a waypoint or destination. Radar return signals are received from nearby land masses, and this information is superimposed on the stored images in some situations. If the object tracked is located off-shore, the off-shore LDS receives (Loran) offset data from a plurality of on-shore LDS monitors to periodically correct the location of the off-shore object.

Brief Summary Text (11):
A map-aided navigation system that uses TERCOM-SITAN control signals is disclosed by U.S. Pat. No. 4,829,304, issued to Baird. An aircraft flies over terrain to be mapped and estimates aircraft location and altitude at a sequence of sampling points. These data are Kalman filtered, and the resulting filtered data are used to determine elevation and slope for this terrain. On a subsequent flight over this terrain, an aircraft uses altimeter sensing and the terrain map to determine the most likely flight path actually followed by the aircraft.

Brief Summary Text (14):
U.S. Pat. No. 4,899,161, issued to Morin et al, discloses a coordinate conversion system for air traffic control applications. Radar observable variables, such as target slant range, azimuth angle and altitude are transformed to a selected coordinate system centered at the target. The system converts from geodetic coordinates to ellipsoidal or conformal spherical coordinates, then to target location coordinates, followed by stereographic projection that preserves azimuthal angles for display of the target-aircraft spatial relationship. Elevation information is not available after stereographic projection is implemented.

Brief Summary Text (18):
A vehicle navigation system that uses local topographical maps to correct an aircraft flight path is disclosed in U.S. Pat. No. 4,939,663, issued to Baird. During flight, local altitude measurements are made and used with a digital database containing local elevation (above a ground reference surface) of the Earth's surface. The location of the aircraft is sampled separately and is compared with the local elevation contour corresponding to the altimeter measurement; a location correction is determined that places the aircraft location over the elevation contour. Here, the local altitude coordinate of the aircraft is determined exclusively by the altimeter measurement, and the other two aircraft position coordinates are determined approximately by independent position sampling, which may use aircraft dead reckoning.

Brief Summary Text (19):
Evans et al, in U.S. Pat. No. 4,954,833, disclose a method for converting GPS-determined location coordinates, expressed in a natural coordinate frame involving geodetic azimuth, to a coordinate system involving astronomical azimuth. In U.S. Pat. No. 5,030,957, Evans discloses a method for simultaneously measuring height in two coordinate systems, orthometric and geometric, using GPS receiver antennas attached to the top of survey leveling rods.

Brief Summary Text (23):
In U.S. Pat. No. 5,001,647, Rapiejko et al disclose an inertial transformation matrix generator that generates a sequence of successive incremental Euler

transformation matrices to follow the motion of a moving aircraft. Rate-sensing gyros, mounted on the housing of the craft, independently sense the motion of the craft in three mutually orthogonal directions. The present spatial orientation of the craft is periodically corrected by independent measurements made by an inertial navigation system mounted on the craft.

Brief Summary Text (24):
A map and text display system for aircraft navigation is disclosed by Factor et al in U.S. Pat. No. 5,057,835. The system stores terrain elevation information for regions adjacent to a flight path and compares the presently measured aircraft altitude with the maximum terrain elevation for the local region over which the aircraft is positioned, to determine if the aircraft altitude is above a safety threshold for that region. Aircraft latitude, longitude and altitude are determined conventionally, and no second source of aircraft altitude information is used to vary or improve the altitude estimate.

Brief Summary Text (25):
Moroto et al disclose a display system for a user of land vehicle or aircraft navigation apparatus, in U.S. Pat. No. 5,121,326. An on-board database contains map data for the local terrain, including roads, road intersections and selected landmarks, in a chosen location coordinate system. These map data are transformed to a display coordinate system that moves with the user and is visibly displayed on a screen for the user. The transformations include rotations and translations of the stored map data.

Brief Summary Text (30):
In U.S. Pat. No. 5,208,757, issued to Appriou et al, an on-board system for determination of the location of an airborne vessel, such as an aircraft, is disclosed. The spatial coordinates of discrete landmarks on the terrain below are entered into a computer memory. As the vessel flies over a landmark, the known location of this landmark is used to correct the location given by another navigation means that uses images of small portions of the terrain below for location determination. Kalman filtering is applied to the location of the vessel relative to the terrain.

Brief Summary Text (32):
An interactive automated mapping system that uses location information determined using a GPS is disclosed by Mauney et al in U.S. Pat. No. 5,214,757. Attributes related to location information can be entered, stored and subsequently displayed. The system creates new maps and/or annotates existing maps but does not provide reconciliation between an existing map and a new map.

Brief Summary Text (34):
Interpolation image processing of a digital map is employed to determine pixel color is disclosed in U.S. Pat. No. 5,299,300, issued to Femal et al. Interpolation of pixel color or related data, for a plurality of pixels with spatial locations adjacent to the spatial location of a target pixel, is used to compute to compute the pixel data for the target pixel.

Brief Summary Text (37):
A system for correcting a compass heading for a vehicle is disclosed in U.S. Pat. No. 5,339,246, issued to Kao. Two or more magnetic compass heading readings are sensed, and a GPS-determined compensation factor is computed to adjust a magnetic heading value to a true heading as indicated by the GPS. The magnetic compass heading and GPS heading values are referenced to a single map.

Brief Summary Text (39):
A relative aircraft guidance system using GPS signals is disclosed by Youhannaie in U.S. Pat. No. 5,344,105. First and second airborne vehicles, positioned close together, each carry a GPS antenna and receiver/processor and receives GPS signals

from the same group of GPS satellites. Using a selected GPS satellite constellation, the first vehicle locates a target, converts the target location to a reference frame of the selected satellite constellation, and communicates the target location in this reference frame and identity of the selected satellite constellation to the second vehicle, for guidance purposes.

Drawing Description Text (2):
FIG. 1 illustrates mapping of survey location coordinates, from a pre-GPS ellipsoid, such as NAD 83, to a local three-dimensional coordinate system S1, before GPS-assisted mapping became available.

Drawing Description Text (3):
FIG. 2 illustrates mapping of survey location coordinates in the prior art, from a WGS 84 ellipsoid to a pre-GPS ellipsoid, such as NAD 83, to a local three-dimensional coordinate system S1.

Detailed Description Text (2):
FIG. 1 illustrates mapping of survey location coordinates before GPS-assisted surveying became available. A survey team, usually including two or more persons, each of whom carried a portion of the survey equipment, would locate a local survey monument whose location coordinates were known. Using the local monument as a reference point, the team would make survey measurements in the field in a survey coordinate system such as NAD 27 or NAD 83, using an oblate or prolate ellipsoid whose dimensions were fixed in that coordinate system. The NAD 83 ellipsoid (and associated survey coordinate system), developed in 1983, is a more recent version of the older NAD 27 ellipsoid, developed in 1927, and is discussed below. The NAD 83 survey coordinates would then be transformed or projected into a local three-dimensional coordinate system S1 by a coordinate transformation indicated as T2 (S1;NAD83). Here, the first variable S1 indicates the destination and the second variable NAD83 indicates the source for the location coordinates. The local coordinate system S1 is three-dimensional and involves orthogonal horizontal coordinates ("Northing" and "Easting" in some regions of the world, "Southing" and "Westing" in other regions), measured in a tangent plane .tau.1 having a specified survey center SC, and a vertical coordinate, "Height," measured in a direction perpendicular to the tangent plane .tau.1. A "projection," as used here, is a mathematical means for transferring geographical and related information from a curved surface, such as an ellipsoid used to represent the Earth's surface, into or onto another two-dimensional surface, such as a plane, cylindrical surface or conical surface.

Detailed Description Text (3):
FIG. 2 illustrates mapping of survey location coordinates in the prior art after GPS-assisted surveying became available. Survey location coordinates are first obtained using the WGS 84 ellipsoid, which is discussed below and has parameters close to the corresponding parameters of another survey ellipsoid. The NAD 83 ellipsoid is used here as an example of this other ellipsoid; any other ellipsoid that approximately matches the Earth's surface can be used here. In one approach, these survey location coordinates are mapped into NAD 83 location coordinates, using a first transformation T1(NAD83;WGS84), and the NAD 83 location coordinates are then mapped into the local coordinate system S1 using a second transformation T2(S1;NAD83).

Detailed Description Text (12):
As illustrated in FIG. 6, a surveyor or surveyor vehicle 11 carries an SATPS location determination module 13 that includes an SATPS signal antenna 15 and associated SATPS signal receiver/processor 17 that receive and process SATPS signals from three or more SATPS satellites 19, 21, 23, 25. The SATPS may be a Global Positioning System (GPS), a Global Orbiting Navigation Satellite System (GLONASS), an ORBCOMM system, or a similar satellite-based location determination system. The SATPS receiver/processor 17 receives these signals and, using analysis

of the code phase signals or the carrier phase signals, or both, initially determines the location coordinates of the SATPS antenna 15 in a special coordinate system, usually the WGS 84 datum or the nearly-equivalent NAD 83 datum, which are discussed by Alfred Leick in GPS Satellite Surveying, John Wiley & Sons, New York, Second Edition, 1995, pp. 215-232, 410-429 and 486-499. The information in this material is incorporated by reference herein.

Detailed Description Text (70):
The Global Positioning System (GPS) is part of a satellite-based navigation system developed by the United States Defense Department under its NAVSTAR satellite program. A fully operational GPS includes up to 24 satellites approximately uniformly dispersed around six circular orbits with four satellites each, the orbits being inclined at an angle of 55.degree. relative to the equator and being separated from each other by multiples of 60.degree. longitude. The orbits have radii of 26,560 kilometers and are approximately circular. The orbits are non-geosynchronous, with 0.5 sidereal day (11.967 hours) orbital time intervals, so that the satellites move with time relative to the Earth below. Theoretically, three or more GPS satellites will be visible from most points on the Earth's surface, and visual access to two or more such satellites can be used to determine an observer's position anywhere on the Earth's surface, 24 hours per day. Each satellite carries a cesium or rubidium atomic clock to provide timing information for the signals transmitted by the satellites. Internal clock correction is provided for each satellite clock.

Detailed Description Text (71):
Each GPS satellite transmits two spread spectrum, L-band carrier signals: an L1 signal having a frequency f1=1575.42 MHz and an L2 signal having a frequency f2=1227.6 MHz. These two frequencies are integral multiples f1=1540 f0 and f2=1200 f0 of a base frequency f0=1..theta.23 MHz.

Detailed Description Text (74):
Use of the PRN codes allows use of a plurality of GPS satellite signals for determining an observer's position and for providing navigation information. A signal transmitted by a particular GPS signal is selected by generating and matching, or correlating, the PRN code for that particular satellite. All PRN codes are known and are generated or stored in GPS satellite signal receivers carried by ground observers. A first PRN code for each GPS satellite, sometimes referred to as a precision code or P-code, is a relatively long, fine-grained code having an associated clock or chip rate of 10 f0=10.23 MHz. A second PRN code for each GPS satellite, sometimes referred to as a clear/acquisition code or C/A-code, is intended to facilitate rapid satellite signal acquisition and hand-over to the P-code and is a relatively short, coarser-grained code having a clock or chip rate of f0=1.023 MHz. The C/A-code for any GPS satellite has a length of 1023 chips or time increments before this code repeats. The full P-code has a length of 259 days, with each satellite transmitting a unique portion of the full P-code.

Detailed Description Text (75):
The portion of P-code used for a given GPS satellite has a length of precisely one week (7.000 days) before this code portion repeats. Accepted methods for generating the C/A-code and P-code are set forth in the document GPS Interface Control Document ICD-GPS-200, published by Rockwell International Corporation, Satellite Systems Division, Revision B-PR, Jul. 3, 1991, which is incorporated by reference herein.

Detailed Description Text (76):
The GPS satellite bit stream includes navigational information on the ephemeris of the transmitting GPS satellite and an almanac for all GPS satellites, with parameters providing corrections for ionospheric signal propagation delays suitable for single frequency receivers and for an offset time between satellite clock time and true GPS time. The navigational information is transmitted at a rate of 50

Baud. A useful discussion of the GPS and techniques for obtaining position information from the satellite signals is found in Tom Logsdon, The NAVSTAR Global Positioning System, Van Nostrand Reinhold, New York, 1992, pp. 1-90; the information from this reference is incorporated by reference herein.

Detailed Description Text (77):
A second configuration for global positioning is the Global Orbiting Navigation Satellite System (GLONASS), placed in orbit by the former Soviet Union and now maintained by the Russian Republic. GLONASS also uses 24 satellites, distributed approximately uniformly in three orbital planes of eight satellites each. Each orbital plane has a nominal inclination of 64.8.degree. relative to the equator, and the three orbital planes are separated from each other by multiples of 120.degree. longitude. The GLONASS circular orbits have smaller radii, about 25,510 kilometers, and a satellite period of revolution of 8/17 of a sidereal day (11.26 hours). A GLONASS satellite and a GPS satellite will thus complete 17 and 16 revolutions, respectively, around the Earth every 8 days. The GLONASS system uses two carrier signals L1 and L2 with frequencies of f1=(1.602+9 k/16) GHz and f2=(1.246+7k/16) GHz, where k (=0, 1, 2, . . . , 23) is the channel or satellite number. These frequencies lie in two bands at 1.597-1.617 GHz (L1) and 1,240-1,260 GHz (L2). The L1 code is modulated by a C/A-code (chip rate=0.511 MHz) and by a P-code (chip rate=5.11 MHz). The L2 code is presently modulated only by the P-code. The GLONASS satellites also transmit navigational data at at rate of 50 Baud. Because the channel frequencies are distinguishable from each other, the P-code is the same, and the CIA-code is the same, for each satellite. The methods for receiving and analyzing the GLONASS signals are similar to the methods used for the GPS signals.

Detailed Description Text (79):
A Satellite Positioning System (SATPS), such as the Global Positioning System (GPS) or the Global Orbiting Navigation Satellite System (GLONASS), uses transmission of coded radio signals, with the structure described above, from a plurality of Earth-orbiting satellites. A single passive receiver of such signals is capable of determining receiver absolute position in an Earth-centered, Earth-fixed coordinate reference system utilized by the SATPS.

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L33: Entry 1 of 1 File: USPT Sep 1, 1998

DOCUMENT-IDENTIFIER: US 5802492 A
TITLE: Computer aided routing and positioning system

Detailed Description Text (74):

30

FIG. 2 also provides an overview of the user options and program controls, described in greater detail elsewhere in this disclosure as, for example, command menus, dialog boxes, control panels, adjustable parameters and global/local system settings. The user exercises such user options by command input and system management methodologies well known to software artisans e.g. conventional keystroke sequences; mouse, joystick or touch-screen manipulations on pertinent pixel locations, symbols and buttons; command text entries; voice-recognition technologies; macros and batch commands; and equivalents. In various embodiments, particularly embedded applications, such user control mechanisms are consolidated, overlapping, redundant, or simplified, as dictated by consumer requirements, user friendly design criteria and anticipated usage patterns.

Detailed Description Text (106):
The system enables input and alteration of waypoint lists by means of an array of list based locating tools that can search zip code, phone exchange and place name indexes, as shown in FIGS. 1D, 1E and 1F. The map display recenters on new locations thus selected by the user. Also, the user can employ graphic/cartographic means for the selection of waypoints and related manipulation of the map display. For an example, users can choose waypoints by pointing and clicking upon symbols or place names or at specified pixel locations on the digital map display which correspond to geographic coordinates of places or objects situated on or adjacent to the earth's surface. Graphic, intuitive waypoint input location is further facilitated by capabilities to zoom amongst map scales and detail levels as well as panning or shifting to recenter the map display upon a different place or set of geographic coordinates.

L32: Entry 1 of 1 File: USPT Sep 1, 1998

US-PAT-NO: 5802492
DOCUMENT-IDENTIFIER: US 5802492 A

TITLE: Computer aided routing and positioning system

DATE-ISSUED: September 1, 1998

INVENTOR-INFORMATION:

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APPL-NO: 08/661600 [PALM]
DATE FILED: June 11, 1996

PARENT-CASE:
CROSS REFERENCE TO RELATED PATENT APPLICATION This patent application is a continuation-in-part (CIP) of the David M. DeLorme et al U.S. patent application Ser. No. 08/381,214 filed Jan. 31, 1995, now U.S. Pat. No. 5,559,707 for COMPUTER AIDED ROUTING SYSTEM which is a CIP of the David M. DeLorme et al U.S. patent application Ser. No. 08/265,327 filed Jun. 24, 1994, now abandoned for COMPUTER AIDED MAP LOCATION SYSTEM and the contents of these related patent applications are incorporated herein by reference.

INT-CL-ISSUED: [06] G01 C 21/00, G08 G 1/123

US-CL-ISSUED: 701/200; 701/201, 701/208, 701/211, 701/213, 340/990, 340/995
US-CL-CURRENT: 455/456.5; 340/990, 340/995.23, 340/995.24, 701/201, 701/208, 701/211, 701/213

FIELD-OF-CLASSIFICATION-SEARCH: 364/443, 364/444.1, 364/444.2, 364/449.2, 364/449.3, 364/449.4, 364/449.5, 364/449.6, 364/449.7, 340/990, 340/995, 340/991, 340/993, 342/357, 342/457
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5208756	May 1993	Song	364/449.1
☐	5543789	August 1996	Behr et al.	340/995
☐	5559707	September 1996	DeLorme et al.	364/443

ART-UNIT: 364

PRIMARY-EXAMINER: Nguyen; Tan Q.

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ABSTRACT:

A Computer Aided Routing and Positioning System (CARPS) determines a route along selected waypoints that include a travel origin and a travel destination and intermediate waypoints therebetween. The selected waypoints may be uploaded to or downloaded from various geocoding devices that utilize the Global Positioning System (GPS). A CARPS database incorporates travel information selected from a range of multimedia sources about the transportation routes, waypoints, and geographically locatable points of interest (POIs) selected by the user along the travel route. The CARPS software permits user selection of specified POI types within a user-defined region of interest and user selection of particular POIs from the selected types within the region of interest. The transportation routes, waypoints, POIs and region of interest are identifiable in the computer by coordinate locations of a selected geographical coordinate system. The CARPS software is constructed to present a user-customized travelog for preview on the computer display of the user-defined travel route. The travel planner can preview on the computer display a multimedia travelog particularly customized for the user-defined travel route including multimedia information on the transportation routes, waypoints, and POIs selected by the user. The user can engage in an iterative trip planning process of revising the route and previewing travelogs of revised travel routes until a satisfactory travel route is determined. Hardcopies of customized travel maps of the user-defined travel route can be used in conjunction with a GPS device which has been uploaded with selected waypoint data.

50 Claims, 35 Drawing figures

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L32: Entry 1 of 1 File: USPT Sep 1, 1998

DOCUMENT-IDENTIFIER: US 5802492 A
TITLE: Computer aided routing and positioning system

Detailed Description Text (106):
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